

# Slides for CME Arrival and Impact Team

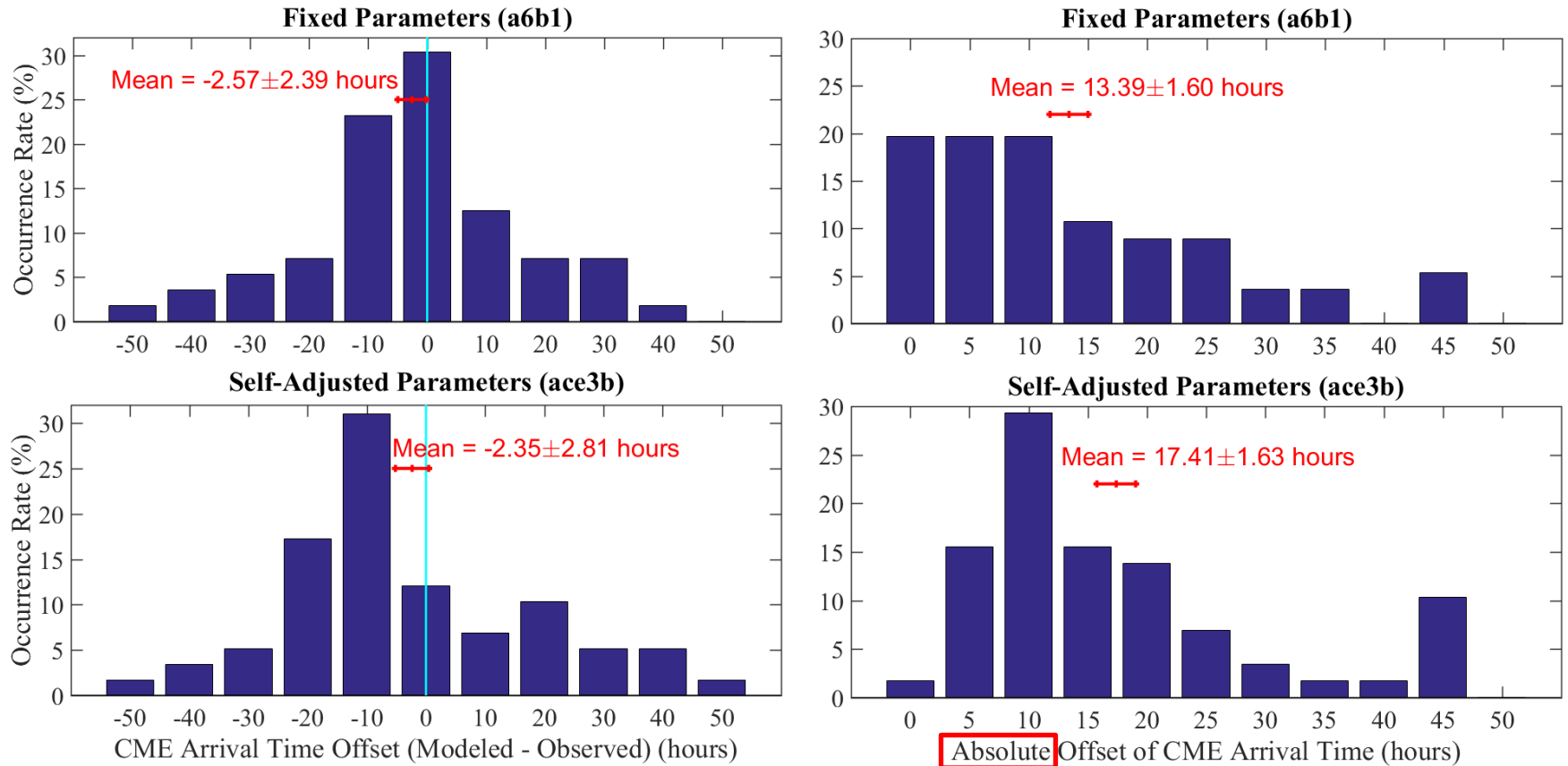
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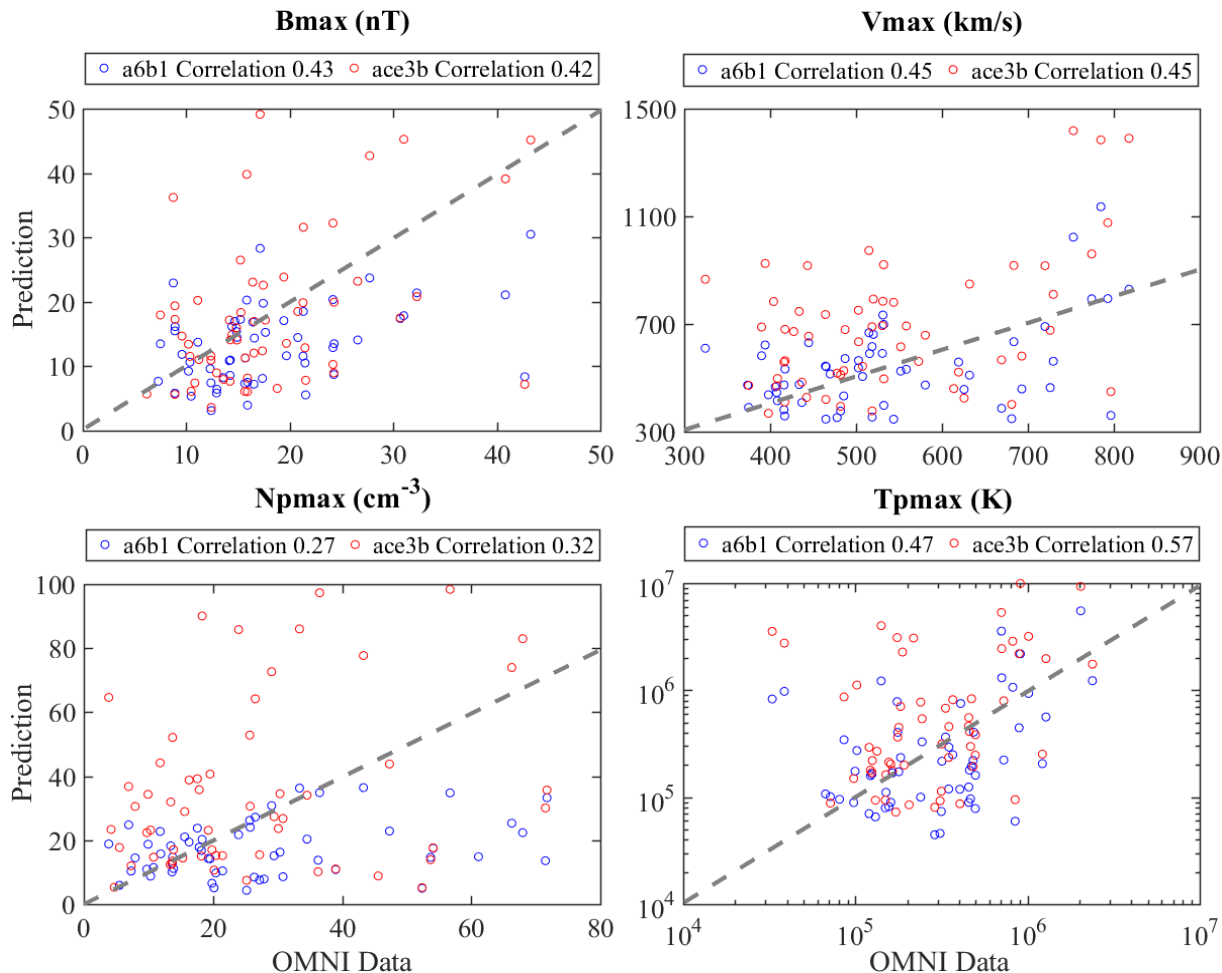
International CCMC-LWS Working Meeting

# Time Offset for CME Arrival



- Two different versions of ENLIL model: a6b1 and ace3b
- The absolute time offsets of CME arrival differ by more than 4 hours on average (based on >100 ICMEs in 2012-2015), solely due to the change of parameter setting

# Simulated vs. Observed CME Parameters

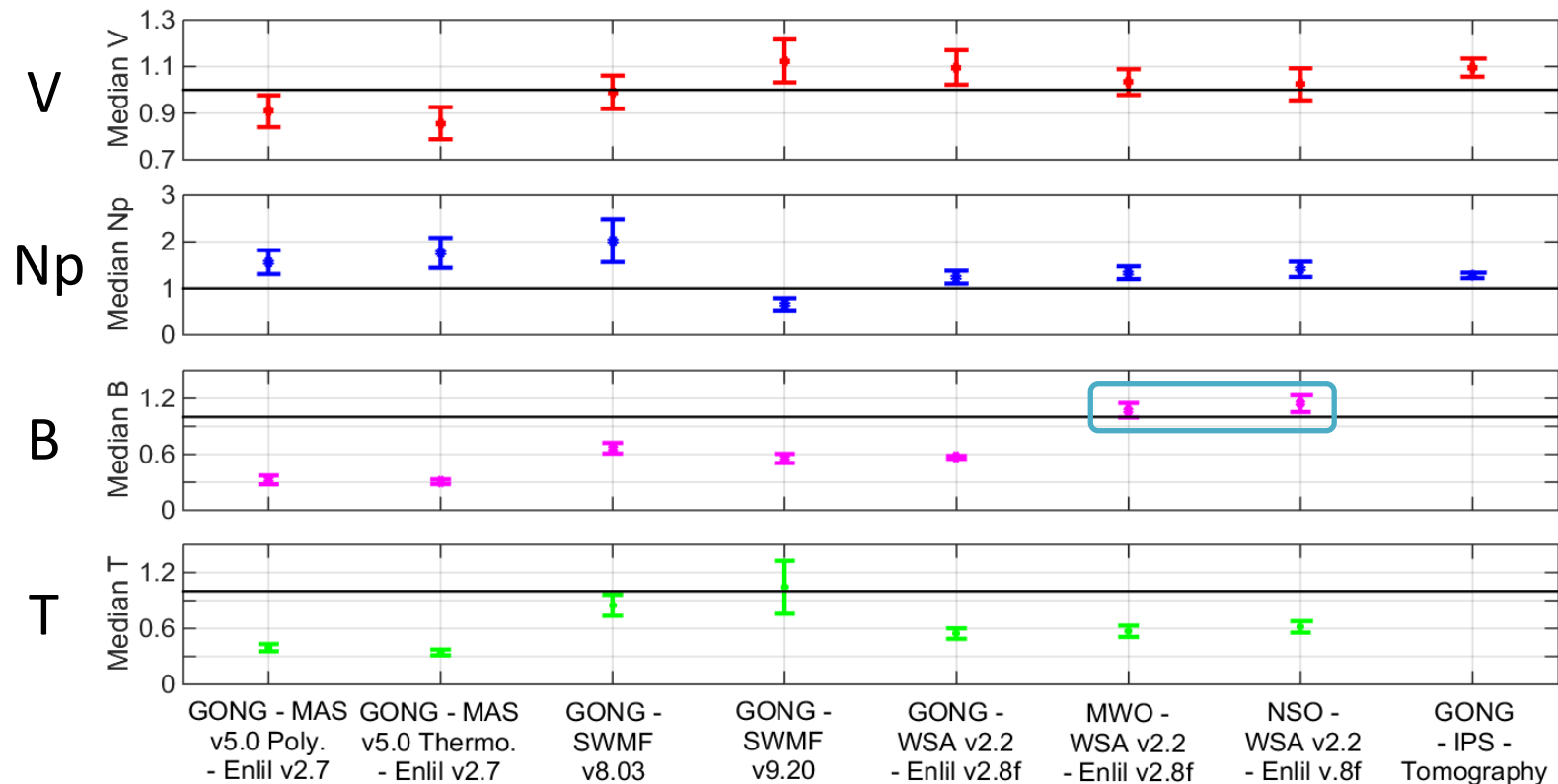


➤ The difference from different observation data can affect the results. For example, the difference of  $V_{\max}$  from OMNI and ACE is  $>200$  km/s for 3 CMEs. The correlation for  $N_{p\max}$  is weaker if using ACE

➤ In several cases where the CME  $V_{\max}$  is overestimated, there are interactions of multiple CMEs

- Using the fixed parameters (a6b1), the  $V_{\max}$  and  $N_{p\max}$  are underestimated. They are overestimated in the case of self-adjusted parameters (ace3b)
- Similar trends are found for the correlations of mean values of CME parameters. The mean temperature are overestimated in both settings

# Model/Observation Ratios of Background Solar Wind Parameters



(Jian et al., 2015)

- ❖ Statistics are from seven CRs and done for minimum and maximum of each parameter too. They provide error bars for solar wind prediction
- ❖ Solar wind speed is the best modeled parameter, within  $\pm 20\%$
- ❖ Density and IMF B can differ from observations by a factor of 2-3, likely affect the CME propagation in the simulation

# Discussion

- How much does the performance of modeling the background solar wind affect the CME simulation?
- What background solar wind to compare? The one just before the CME arrival? Comparing with the simulation without CME?
- Focus on CMEs with large discrepancy between the observed and simulated parameters, and investigate how to improve the simulation